



EFFECTIVENESS OF SENSORY STIMULATION PROGRAM AMONG PATIENTS WITH STROKE IN ICU OF SELECTED HOSPITALS

Guna Priya. G

Ph. D. Nursing Research Scholar, Vinayaka Mission's Research foundation (DU), Salem, Tamil Nadu, India.

Abstract:

Background: Stroke is a leading cause of death and long-term disability, often resulting from an interruption of blood flow to the brain. It frequently leads to sensory deprivation due to impaired responses to stimuli. Early sensory stimulation can reduce sensory loss and enhance recovery by activating the Reticular Activating System, which supports brain function and consciousness. **Aim:** This study aimed to evaluate the effectiveness of a sensory stimulation program (SSP) in improving motor function and verbal response among stroke patients in the ICU of selected hospitals. **Methodology:** A quasi-experimental pre-test–post-test design was used. Thirty stroke patients were divided into an experimental group (n=15) and a control group (n=15). The experimental group received auditory and tactile stimulation for 26 minutes daily over five days, while the control group received routine care. Data were collected on motor function and verbal response using the Glasgow Coma Scale. **Results:** The experimental group showed significant improvement in motor function and verbal response, with pre-test to post-test scores increasing from 5.4 to 8.3. The control group showed a smaller improvement from 5.2 to 6.8. Statistically significant differences between the groups were noted. **Conclusion:** Early sensory stimulation significantly improved motor function and verbal response in stroke patients. The findings support the integration of sensory stimulation programs in stroke rehabilitation to enhance patient recovery.

Keywords: Stroke, Sensory stimulation, Motor function, Verbal response.

INTRODUCTION

Stroke is a major medical emergency that can cause permanent neurological damage, disability, or death. It results from an interruption of blood flow to the brain due to either a blockage (infarction) or hemorrhage, leading to a rapid loss of brain function. Stroke patients often experience sensory deprivation because their ability to respond to stimuli is impaired. Early implementation of sensory stimulation programs can support

recovery and prevent sensory deprivation. In the United States, stroke is the leading cause of long-term disability, affecting millions each year and commonly occurring in individuals over 40 years of age. More than 700,000 new cases occur annually in the U.S., and approximately 50,000 in Canada, with numbers expected to rise due to an aging population. Early and appropriate interventions can reduce the extent of disability and enhance patient satisfaction. Sensory stimulation helps patients overcome sensory loss by maintaining normal daily rhythms and promoting environmental awareness. Nurses play a key role by providing auditory and tactile stimuli, communicating with patients, and involving family members to enhance recovery. Introducing familiar sounds, reading favorite books, or playing preferred programs can help restore cognitive responsiveness.

Previous studies highlight that early sensory stimulation activates the Reticular Activating System, which supports improved consciousness and brain function. Stroke patients, being highly dependent on caregivers, require well-planned care tailored to meet their physical and emotional needs. Globally, stroke is the third leading cause of death, following heart disease and cancer. In India, the burden is especially high, with younger populations increasingly affected. The World Health Organization projects that by 2050, nearly 80% of global stroke cases will occur in low- and middle-income countries like India and China.

Rehabilitation should start within 24–48 hours once the patient is stable, aiming to restore functional independence and quality of life. In low-resource settings, nurses and primary caregivers play an essential role in continuing sensory stimulation at home. Educating caregivers in auditory and tactile stimulation can improve recovery, reduce costs, and increase patient motivation to use affected areas. This study seeks to explore the effectiveness of early sensory stimulation in supporting stroke recovery and caregiver involvement.

AIM OF THE STUDY:

The aim of the study to evaluate the effectiveness of sensory stimulation program among patients with stroke in ICU of selected hospitals.

MATERIALS AND METHODS

Study Design and Participants

A quasi-experimental pre-test–post-test design was used to evaluate the effectiveness of the Sensory Stimulation Program (SSP) on motor function and verbal response among stroke patients. The study was conducted in selected hospitals in Salem, including Shanmuga Hospital and S.K.S. Hospital. Thirty stroke patients with mild motor and verbal impairments were selected and divided into experimental (n=15) and control (n=15) groups using a non-probability convenience sampling method.

Inclusion and Exclusion Criteria

Inclusion Criteria:

Patients diagnosed with stroke, not under sedation, and without a history of head injury.

Exclusion Criteria:

Patients declared brain dead, admitted with transient ischemic attack or head injury, or diagnosed with cerebral aneurysm.

Tools

The demographic data sheet captured age, gender, marital status, role, and stroke risk factors for descriptive analysis. The rating scale, based on the Glasgow Coma Scale, evaluated eye opening, motor function, and verbal response.

Data Collection Procedure

After obtaining formal permission, data collection was conducted in the ICU of selected hospitals. Pre-test assessments were done on Day 1 for both groups. The experimental group received the SSP comprising auditory and tactile stimulation sessions for 26 minutes daily over five consecutive days. The control group received routine nursing care. Post-test assessments were conducted on Day 5 using the same tool.

Data Analysis

Data were analyzed using descriptive and inferential statistics. Descriptive statistics summarized demographic variables, while paired and unpaired t-tests were used to compare pre-test and post-test scores between the experimental and control groups.

RESULTS:

Socio-Demographic Variables of the Patients

This table presents the socio-demographic characteristics of patients in both the experimental (n=15) and control groups (n=15). The variables assessed include age, gender, marital status, role of the individual, and selected risk factors for stroke. The distribution of patients across age groups shows that the majority in both groups are aged 46-55 years. Gender-wise, there is a higher proportion of males in both groups. All participants are married, and the majority are either breadwinners or homemakers. Risk factors for stroke are notably higher in the experimental group, with a larger proportion of patients having hypertension.

Pretest and Post-Test Scores of Motor Function and Verbal Response

This table compares the pre-test and post-test scores of motor function and verbal response within the experimental and control groups. The experimental group shows a significant improvement in scores (from a mean of 5.4 to 8.3), with a high paired t-value (14.20) indicating a significant difference at the 0.05 level. The control group also shows an improvement (from a mean of 5.2 to 6.8), but with a lower paired t-value (6.32), suggesting a less pronounced effect.

Comparison of Post-Test Motor Function and Verbal Response Scores

This table provides the post-test mean scores and standard deviations of motor function and verbal response between the experimental and control groups. The experimental group shows a higher mean (8.3) compared to the control group (6.8), with a calculated t-value of 4.16, indicating a significant difference at the 0.05 level. The standard deviations for both groups suggest some variability in the outcomes, but the difference in means remains significant.

Table 1: Socio Demographic variable of the patients.

S. No	Demographic Variables	Experimental group (n=15)		Control Group (n=15)	
		F	%	F	%
1.	Age in years				
	(a) 36-45yrs	3	20	1	6.6
	(b) 46-55yrs	9	60	6	40.0
	(c) 56-65yrs	3	20.	8	53.4
2.	Gender				
	(a) Male	9	60	10	66.7
	(b) Female	6	40	5	33.3
3.	Marital Status				
	(a) Married	15	100	15	100
4.	Role of an individual				
	(a) Bread winner	9	60	10	66.7
	(b) Home maker	6	40	5	33.3
5.	Selected Risk factors for stroke				
	(a) Hypertension	1	6.6	5	33.3
	(b) Diabetes & Hypertension	5	33.3	3	20.0
	(c) None	9	60	7	46.7

Table 2: Pretest & post test Score of motor function and verbal response within the Experimental and Control Group among patients with stroke.

Group	Mean pre-test score	Mean post-test score	SD	Table value	Paired 't' value
Experimental Group	5.4	8.3	0.79	2.145	14.20*
Control Group	5.2	6.8	0.98	2.145	6.32*

* Significant at 0.05 level

Table 3: Mean and Standard deviation of Motor function score and verbal response score among samples in experimental and control group.

Group	Post-Test		Table value	Calculated 't' value
	Mean	Standard deviation		
Experimental group	8.3	1.05	2.78	4.16*
Control group	6.8	0.91		

* Significant at 0.05 level

DISCUSSION:

The study results show that the experimental group experienced a significant improvement in motor function and verbal response, with a mean pre-test score of 5.4 increasing to 8.3 post-test (paired t-value = 14.20). In contrast, the control group showed a smaller improvement from 5.2 to 6.8 (paired t-value = 6.32). The comparison of post-test scores revealed that the experimental group had significantly better outcomes (mean = 8.3) than the control group (mean = 6.8), with a calculated t-value of 4.16. These findings indicate that the intervention in the experimental group led to greater improvement in motor and verbal functions.

CONCLUSION:

In conclusion, the study demonstrates that the intervention in the experimental group significantly improved motor function and verbal response compared to the control group. The significant improvements observed in the experimental group, both within the group (pre-test to post-test) and between groups, suggest that the intervention was effective in enhancing patient outcomes. The results highlight the potential benefits of the intervention for improving stroke rehabilitation outcomes.

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